

**ABSTRACT OF THE DISCLOSURE**

Effective management of finfish stocks to avoid or mitigate the threat of fish-killing phytoplankton is of increasing concern, particularly in temperate seas. Intensive spatial and temporal sampling is required to monitor and quantify potentially harmful species, so that prior warning can be received of an imminent bloom. The use of large-subunit rRNA (LSU rRNA)-targeted oligonucleotide probes based on the sandwich hybridization assay to detect the fragile species *Heterosigma akashiwo* (Hada) Hada and *Fibrocapsa japonica* Toriumi & Takano (Raphidophyceae) is disclosed. Species-specific sandwich hybridization assays were successfully developed for various Raphidophytes.